REMARKS

The February 1, 2006 Office Action is based upon pending Claims 1-47; Claims 29-47 have been withdrawn. In this paper, Claims 1, 22, 27, and 28 have been amended and Claims 30-39 and 41-47 have been canceled without prejudice. New Claims 48-59 have also been added. Support for the claim amendments can be found in Figures 5-6 and paragraphs [0024], [0036], [0040]-[0043], [0047] and [0048]. Thus, after this amendment, Claims 1-29, 40, and 48-59 are pending.

Rejections Based on Waitts

Claims 1 and 3-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over the patent issued to Waitts (U.S. Patent 5,956,164).

Waitts, however, fails to disclose each of the limitations recited in amended Claim 1. Waitts, for example, fails to disclose a plurality of optical elements comprised of microscopic ring patterns that "*cooperate to produce an image*" wherein "each of the elements [have] *optical power and a focal length*, at least some of the focal lengths being substantially different from other focal lengths such that the optical power of the elements are different, such that when *a viewer is disposed with respect to the surface multiple images of the viewer* are formed at different distances from the surface," as recited in amended Claim 1.

Waitts discloses holograms capable of reproducing previously recorded three-dimensional images, such as a cube, a pair of cylinders or a tetrahedron, on image planes located at different distances from the surface of the substrate. (Column 2, line 63 to column 3, line 1). Nowhere does Waitts disclose or remotely suggest imaging of an object that is not recorded in the hologram, such as that of a viewer disposed, e.g., in front of or behind, the hologram. Rather, Waitts's holograms reproduce images previously recorded in the hologram. Likewise, Waitts's holograms do not have a focal length or an optical power which are parameters relevant to optical imaging.

Waitts does use the term "focal plane." (Column 2, lines 63-67). However, as used by Waitts, focal plane is defined by "the plane of the substrate 10." (Column 3, line 1). Such a definition is inconsistent with the terms "focal length" and "optical power" as commonly used in

imaging optics. This fact is not surprising as Waitts does not teach optical imaging but teaches reproduction of holographically recorded images.

Waitts also discloses diffraction gratings. Waitts, however, does not disclose that such diffraction gratings comprise microscopic patterns that cooperate to produce an image or that have a focal length or optical power. Waitt teaches that "[w]hile diffraction gratings exhibit color changes, they do not convey any three dimensional information." (Column 2, lines 5-6). Waitts teaches, for example,

> "areas of a substrate which are embossed with a diffraction grating at different orientations ... In this manner, the substrate has a brighter and more interesting diffractive pattern that could be realized using a diffraction pattern arranged at one angular orientation." (Column 2, Lines 6-17)

Waitts is interested in "'rainbow' visual effects" produced by diffraction gratings. Waitts does not teach optical imaging for example in the sense that when a viewer is disposed with respect to the surface, multiple images of the viewer are formed at different distances from the surface. Applicants maintain therefore that Waitts does not disclose diffractive grating micro-texture that cooperates to produce an image or that has optical power.

The Office Action states that Waitts teaches that the diffractive grating micro-structures reproduce two-dimensional images, which appears in the plane of the sheet, and that the holographic micro-textures reproduce images that appear three dimensional such that the reproduced images may be at different focal planes with respect to the focal plane defined by the plane of the sheet. The Office Action states that Waitts does not teach explicitly whether the diffractive grating and the holographic micro-textures have optical power or not. The Office Action further states, however, that the different focal planes for the reproduced images of the different elements may suggest that the elements may have some sort of optical power to reproduce the images at different focal planes.

As discussed above, however, Waitts clearly fails to disclose optical power. The statement in the Office Action that "the different focal planes for the reproduced images of the different elements suggests that the optical elements have some sort of optical power" is not correct. Neither the diffractive gratings nor the holograms optically image an object such as that of a viewer disposed, e.g., in front of or behind, the diffractive grating or hologram. Moreover,

multiple images of the viewer are not formed at different distances from the sheet as recited in the claims. Thus, the term optical power is not relevant to the structures taught by Waitts, possibly explaining why Waitts never refers to "optical power" and only refers to "focal plane" (not "focal length") in a sense that is inconsistent with the meaning of "focal length" as used in connection with optical imaging.

The Office Action states, however, that it is a standard practice in the art to make the holographic or diffractive gratings having optical power by using focused object beams in the recording step and such modification would have the advantage of making more sharply defined holographic/diffracted images. The Office Action concludes that it would then have been obvious to one skilled in the art to modify the holographic micro-textures and diffractive gratings of Waitts to make them have optical power so that more sharply defined reconstructed images can be produced.

With regard to holograms, the statement made in the Office Action is not correct. It is not well know in the art to make holograms having optical power by using focused object beams in the recording step to make more sharply defined holographic images. Holograms of previously recorded images do not have optical power. In addition, using a focused object beam in the recording step does not introduce optical power to such holograms. Nor is it well known in the art that optical power in holograms produces more sharply defined holographic images. Similarly, it would not have been obvious to one skilled in the art to modify the holographic micro-textures to make the holograms have optical power so that more sharply defined reconstructed images can be produced.

With regard to diffraction gratings, the statement made in the Office Action is also not correct. It is not well know in the art to make diffraction gratings having optical power by using focused object beams in the recording step to make more sharply defined diffracted images. Diffractive grating micro-texture does not have optical power. Also, using a focused object beam in the recording step would not make more sharply defined diffracted images. (Using a focused object beam may be used to form a diffractive lens. However, Waitts does not teach diffractive lenses. Nor would it be obvious for Waitts to used diffractive lenses. Waitts is interested in producing rainbow effects, which are generally associated with diffraction gratings.) Accordingly, it would not have been obvious to one skilled in the art to modify the diffractive

micro-textures to make the diffractive gratings have optical power so that more sharply defined reconstructed images can be produced. Even still, such modifications would not yield multiple images of the viewer formed at different distances from the surface of the sheet.

Waitts also fails to disclose "a plurality of optical elements comprised of microscopic *ring* patterns in the surface that cooperate to produce an image," as recited by amended Claim 1. Nowhere does Waitts disclose or remotely suggest that these holographic textures are rings. Applicants maintain that the holographic micro-textures configured to produce three-dimensional images, such as a cube, a pair of cylinders or a tetrahedron, would not be ring patterns.

Similarly, nowhere does Waitts disclose or remotely suggest that these diffractive grating textures are rings. Applicants maintain that the diffractive grating do not comprise ring patterns.

Therefore, Applicants submit that amended Claim 1 is patentable over Waitts. Claims 3-28 depend directly from amended Claim 1, and therefore, are patentable for at least the same reasons that amended Claim 1 is patentable over the applied art. Features disclosed in the dependent claims are also not shown by Waitts. For example, Waitts does not disclose that some of the focal lengths are positive and others of the focal lengths are negative as recited in Claim 5. Also Waitts does not disclose a plurality of optical elements having substantially similar optical power in a first region adjacent to a second region comprising a plurality of optical elements having substantially different optical power as recited in Claim 22. See also Claim 27 and 28 as amended. Other limitations are also not disclosed by Waitts; nor would they be obvious. Accordingly, allowance of amended Claim 1 and Claims 3-28 is respectfully requested.

Rejections Based on Keberlein

Claims 1-2, 5-14, and 16-22 are rejected under 35 U.S.C. §103(a) as being unpatentable over the patent issued to Keberlein (U.S. Patent 6,800,357).

Keberlein, however, fails to disclose each of the limitations recited in amended Claim 1.

For example, Keberlein does not disclose "a plurality of optical elements comprised of microscopic ring patterns in the surface that cooperate to produce an image," as recited by amended Claim 1. Rather, Keberlein teaches "'rearranging' the circular Fresnel lens by cutting it into multiple star-shaped portions." (Column 4: Lines 7-8). As shown in Figure 1 of Keberlein,

these star-shaped portions cut from the circular Fresnel lens do not contain ring patterns. Nor does the star produced from the portions contain ring patterns.

Moreover, Keberlein does not show that "at least some of the focal lengths are substantially different from other focal lengths," as recited by amended Claim 1. As stated above, Keberlein teaches cutting portions of a circular Fresnel lens into star-shaped components and assembling the components into the star-shaped die. Keberlein is using components from a single Fresnel lens having a single focal length to create the star shaped die as shown in Figure 1. Thus, the optical elements of the die necessarily have the same focal length as the original Fresnel lens from which they were cut.

The Office Action further states that although this reference does not teach explicitly that the focal length for these pieces of multiple Fresnel lenses are different, that such feature is either inherently met by the disclosure or is an obvious modification to one skilled in the art for the benefit of enhancing the three dimensional illusion of the image produced by the pieces having these Fresnel lenses. This feature, however, is not inherent from the Keberlein. As noted above, Keberlein teaches using a single Fresnel lens to create the optical elements for his die, therefore the optical elements would have the same focal length. Accordingly, at least some of the focal lengths being substantially different from other focal lengths does not necessarily result from the teachings of Keberlein.

Furthermore, it is not an obvious modification to one skilled in the art for the benefit of enhancing the three dimensional illusion that some of the focal lengths are different from other focal lengths. To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. *Id.* Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *Id.*

In this case, there is no motivation to modify the teachings of Keberlein by using optical elements having multiple focal lengths. The optical elements as disclosed by Keberlein wholly produce the three dimensional illusion that Keberlein intended to produce. Keberlein states that the arrangement of grooves seen in Fig. 2 "ensures that the viewer, V, is impressed with an

illusion of a three-dimensional star on the flat surface." (Column 5, Lines 52-57). Accordingly, one skilled in the art does not need additionally to provide different focal lengths. Keberlein does not state that different focal lengths are needed, nor is it logical that different focal lengths are needed. Thus, there would be no motivation to further include the feature of having multiple focal lengths to the optical elements.

Additionally, although the Office Action asserts that the multiple focal lengths would enhance the three dimensional illusion, there is no basis for this assumption. As stated in our previous response, there is no evidence that changing the focal length of different portions of the star would "enhance" the three dimensional illusion. Also, it is not clear that changing the focal length of different portions of the star shown by Keberlein would not otherwise interfere with or diminish the three dimensional illusion taught by Keberlein. Moreover, varying the focal length of different portions of the star might additionally introduce a distorting, disorienting, or irregular effect.

Applicants accordingly submit that amended Claim 1 is patentable over Keberlein. Claims 2, 5-14, and 16-22 depend directly from amended Claim 1, and therefore, are patentable for at least the same reasons that amended Claim 1 is patentable over the applied art. Features disclosed in the dependent claims are also not shown by Keberlein. For example Keberlein does not disclose that some of the focal lengths are positive and others of the focal lengths are negative as recited in Claim 5. Also Keberlein does not disclose a plurality of optical elements having substantially similar optical power in a first region adjacent to a second region comprising a plurality of optical elements having substantially different optical power as recited in Claim 22. Other limitations are also not disclosed by Keberlein; nor would they be obvious. Accordingly, allowance of amended Claim 1 and Claims 2, 5-14, and 16-22 is respectfully requested.

New Claims

Applicants have added new Claims 48-59. Applicants maintain that new Claims 48-59 are patentable over the cited prior art.

CONCLUSION

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above remarks, reconsideration and withdrawal of the outstanding rejections and objections is specifically requested.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: _____

Mark J. Gallagher
Registration No. 43,622
Attorney of Record
Customer No. 20,995
(949) 760-0404

2477752
072406